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PREFACE

Forest plan monitoring and evaluation reports are essential elements for maintaining valid, effective and implementable Land and Resource Management Plans (LRMPs). Nantahala and Pisgah National Forests (N/P Forests) operate under an LRMP signed in 1987 and significantly amended (Amendment 5) in 1994. The LRMP for Uwharrie and Croatan National Forests was signed in 1986.

The Annual Monitoring and Evaluation Report for FY 2000 is organized into three chapters, with an introduction and links to additional reports. The first chapter sets the historical context for FY 2000 monitoring and answers the question, “Where have we been?” Chapter 2 discloses the results of FY 2000 monitoring. Chapter 3 evaluates those results and answers the questions, “What does it mean and what will we do about it?”

Photo of Jonas Hole – Upper Creek – Pisgah NF



The organization of Chapter 1 generally follows the seven Criteria from the Montreal Process Criteria and Indicators for the Conservation and Sustainable Management of Temperate and Boreal Forests, endorsed by the United States in 1995. See <http://www.mpci.org>

The organization of Chapters 2 and 3 broadly follows three main emphasis areas of the Government Performance and Results Act (GPRA) as outlined in the USDA Forest Service Strategic Plan (2000 Revision). Those emphasis areas are Ecosystem Health, Multiple Benefits to People, and Effective Public Service. See <http://www.fs.fed.us/plan/>.

KEY FINDINGS AND CERTIFICATION

Overall

The Forest Monitoring Team observes that events such as insect outbreaks, extreme weather, policy and regulatory changes, and the results of litigation, more greatly influence Forest management than direction coming from the Land and Resource Management Plans. Even so, there is still plenty of good resource management work being done in the areas of recreation site improvements, wildlife and plant surveys, soil and water improvements, and timber stand improvements. Additional emphasis needs to be placed on addressing the NEPA/planning capabilities of the Forests, either by filling long vacant district planner positions or otherwise reorganizing the workload in this area.

Ecosystem Health

- ✚ Forest-level bat monitoring documented the presence of the federally endangered gray bat (*Myotis grisescens*) on the Pisgah National Forest. Wildlife biologists, using Anabat Detection Technology, recorded bat echolocation calls positively identified as that belonging to gray bats while mist netting along the French Broad River on the Appalachian Ranger District, Pisgah National Forest. This is the first time that this rare bat species has been confirmed as occurring in North Carolina.
- ✚ New populations of the endangered plant Virginia Spirea were found in Graham County as a result of surveys done in support of the Federal Energy Regulatory Commission (FERC) re-licensing process for hydroelectric dams.
- ✚ From eleven years of data it has been determined that a viable population of red-cockaded woodpeckers exists on the Croatan National Forest. This is believed to be attributable to the increased use of prescribed burning by the Forest Service to restore the longleaf pine communities where the bird resides.
- ✚ Early successional wildlife habitats are being provided at substantially lower levels than that projected in the LRMPs.

✚ Mature forest habitat for those wildlife species associated with more mature and interior forest conditions is increasing at a greater rate than that projected in the 1994 Nantahala and Pisgah LRMP Amendment 5.

✚ A combination of weather, predator dynamics, and the age structure of pine types in the mountains are among the factors contributing to an unprecedented outbreak of southern pine beetle. Mature pine stands, especially shortleaf, pitch, and table mountain pines, are high risk for southern pine beetle attack. The results may be long-term changes in species composition and loss of pine forest type at the landscape scale. The loss of shortleaf pine type in the southern Appalachians was detailed in the Southern Appalachian Assessment. The Forest's ability to quickly respond to the outbreak has been hampered by the lengthy process required to produce environmental assessments and decision documents required prior to suppression action.

✚ Soil and water improvements are occurring in several locations across the Forest. This work is effectively reducing erosion and sedimentation from old roads, trails, and dispersed campsites that receive heavy use by forest visitors.

Multiple Benefits to People

✚ Recreation use was up during FY 2000 due to good weather, and an increasing area population.

✚ In the area of Forest Botanical Products, initial results from ginseng monitoring indicate this plant is absent from up to one-third of potential ginseng sites.

✚ For timber and other wood products, the downward trend in regeneration harvest reversed direction in FY 2000, with the regenerated acreages slightly up from FY 1999.

Effective Public Service

- ✚ During FY 2000 the Disabled Hunter Program served 174 participants. Also, special fishing days were held for disabled children and senior citizens.
- ✚ The Fee Demo Program brought in \$800,000 in fees to help fund a variety of recreation area improvements such as new toilets, picnic shelters, and campsites. Even so, a \$30.5 million backlog exists for meeting health, safety, and accessibility needs at recreation sites.
- ✚ The Forest's ability to produce sound environmental documents in a timely manner in support of projects is questionable. This is due to a combination of factors such as unfilled planner positions and lack of NEPA coordination across the Forests.

Forest Supervisor's Certification

I have evaluated the monitoring results and I have directed that the Action Plan be implemented according to the time frames indicated, unless new information or changed resource conditions warrant otherwise. I have considered funding requirements in the budget necessary to implement these actions.

With these completed changes, the Plan is sufficient to guide forest management for FY 2001, unless ongoing monitoring and evaluation identify further need for change.

Any amendments or revisions to the Forest Plans will be made using the appropriate NEPA procedures.



JOHN F. RAMEY Forest Supervisor

September 18, 2001

GENERAL INFORMATION ON THE NATIONAL FORESTS IN NORTH CAROLINA

Nantahala and Pisgah National Forests

Located in the Blue Ridge province of the Appalachian Mountains, these forests together contain 1.1 million acres dispersed across the 21 mountain counties of western North Carolina. This western 5.7 million acres of the state is seventy-five percent forested, but most of the forests are privately owned. The lands that today make up Pisgah and Nantahala National Forests were purchased from private landowners, mostly during the early 1900's.

The elevations are typically from 2000 to 5000 feet, with numerous higher peaks. The trees are largely deciduous and highly diverse. Rainfall averages 30 to 45 inches per year and there are abundant perennial streams.

The 21-county area where the Forests are located has a resident population of 770,000, with the great majority within four counties: Buncombe, Burke, Caldwell, and Henderson. The largest metropolitan area is Asheville, with an area population of 215,000. However, the Forests are within a day's drive of population centers such as Atlanta, Charlotte, Cincinnati, and Nashville.

Uwharrie National Forest

Uwharrie National Forest is located in the rolling hills of the Piedmont of North Carolina. A variety of hardwood and pine forests are found here. The 50,000+ acre land base consists of many small public land tracts surrounded by private lands, with the largest public land block adjacent to Badin Lake. The forest is named for the Uwharrie Mountains, some of the oldest in North America. The Uwharrie is located at the crossroads of both prehistoric and historic settlements. Its legacy is one of the greatest concentrations of archeological sites in the Southeast. The first gold in the American colonies was found nearby in 1799 and old mining sites still remain. Today, the forest is situated within a 2-hour drive



Photo of the Appalachian Mountains

from the largest population centers in the State. Recreation use is growing, especially in the Badin Lake area and along the 20-mile Uwharrie National Recreation Trail.

Croatan National Forest

Croatan National Forest is comprised of over 159,000 acres located in North Carolina's coastal plain. The land base is more consolidated than the other National Forests in North Carolina, and bounded on all side by water bodies – White Oak River to the west, Neuse River and its tributary, the Trent, to the north and east, and Bogue Sound and the Atlantic Ocean to the south. Water-related recreation is popular on the forest. Cherry Point U.S. Naval Reservation is adjacent to the Forest and the population of the three-county area where the Forest is located is 159,000.



Chapter 1. The Historical Context for Monitoring

This chapter will set the stage for monitoring by briefly describing the history, condition, and management of the forests.

1. Historical Context - The Forests' Contribution to the Conservation of Biological Diversity

The LRMP for **Nantahala and Pisgah National Forests (N/P)**, as amended in 1994, states three broad goals related to the conservation of biological diversity:

- 1) Maintain, and where possible, enhance the diversity of plant and animal communities. Maintain viable populations of existing native wildlife, fish, and plants.
- 2) Threatened and endangered plant and animal species are protected, managed or recovered consistent with the Endangered Species Act; and sensitive species are conserved.
- 3) Attributes and resources of special interest areas including wilderness, research natural areas, and areas registered by the North Carolina Natural Heritage Program are maintained.

Goals for the **Uwharrie and Croatan National Forests (U/C)** are nearly identical, plus special emphasis is placed on the unique pocosin environment of the Croatan.

THE DIVERSITY OF VEGETATION

✚ **Nantahala and Pisgah National Forests** are remarkable for the variety of woodland communities that exist along elevational and moisture gradients: red spruce and Fraser fir at the highest elevations; downslope, northern hardwood communities grading into upland mixed oak forests at mid-elevations; with mixed cove forests containing many tree species in the moist hollows; and pine communities on the lower, drier sites.

✚ 124 tree species are found in these forests, although the relative abundance of different species has changed dramatically in the past 100 years. In 1900 the American chestnut dominated the landscape before it



was virtually wiped out by the introduced chestnut blight during the 1920s and 30s. With the chestnut essentially gone, yellow-poplar (tulip tree), red maple, and several oak species are now much more common. The post-chestnut forest continues to transition into a new form.

✚ Among the conifer communities, the relative abundance of white pine is higher and shortleaf pine is less than 100 years ago, and the Fraser fir in some areas has been devastated by the Balsam wooly adelgid (an insect), possibly in conjunction with air pollution.

✚ Approximately 68 pteridophytes, 1501 grasses and forbs, and 52 vine species have been identified on the Forests.

✚ **Uwharrie National Forest** in the piedmont supports many of the same tree species found in the mountain forests, but is lacking those high-elevation communities. It contains more lowland pine communities such as loblolly, shortleaf and longleaf. A higher proportion of the Uwharrie is in pine, and more of the hardwoods are mixed with pines.

✚ Upland ponds are a unique feature of the Uwharrie Mountains where depressions have an impervious subsoil layer. Surrounding these impoundments are plant communities of species typically found on large river flood plains of the area. Species include ash, water oak, willow oak, button bush, greenbriar, wire grasses, and sedges.

✚ **Croatan National Forest** is ecologically part of the Atlantic Coastal Flatwoods Section and contains many unique plant communities such as pocosins (raised peatlands), forested wetlands, longleaf pine savannas, swamps, interstream flats, and estuaries. Pond pine, loblolly pine and longleaf pine are the most frequent tree species, with small amounts of hardwood forest.

Forest management activities in support of vegetation diversity include reducing competition to ensure future growth of oak trees, application of prescribed fire, testing of blight resistant chestnuts, and inventory and monitoring of rich cove species.

THE DIVERSITY OF ANIMALS

✚ References from the 1970's and 80's document the following species diversity on the Nantahala and Pisgah National Forests:

Mammals	65 species
Reptiles	36 species
Amphibians	44 species
Birds	159 species
Fish	108 species

✚ The Southern Appalachians are recognized as a hot spot for salamander diversity.

✚ Black bears are the most charismatic of the mammals. The solitary black bears held their own over decades of unregulated hunting prior to 1900, while more sociable species such as elk, deer, beavers, otters, and all the large predators were virtually wiped out. Populations of deer, beavers and otters are reestablished, though not yet what they once were.

✚ Among birds, turkey, grouse, and neotropical migratory birds have received the most attention from management actions and species surveys. Turkeys were at very low numbers during the first half of the 1900s, but reintroductions and habitat management have been effective in reestablishing populations throughout North Carolina. Grouse populations are believed to be less than optimum due to loss of brushy or early successional forest habitats, since the forest overall is aging. Neotropical migratory songbirds are a concern nationwide due to apparent population declines. The reasons for these declines are not clear, and annual surveys on the national forests began in 1996.

✚ **Uwharrie National Forest** also provides productive, diverse habitat for a wide variety of species. Most of the mammalian species in North Carolina are present in the Piedmont. Raccoons are less common than on the coastal plain. Squirrel species on the Forest include gray., flying, and fox. Sixty species of reptiles and amphibians are present. This diversity is in part supported by the upland ponds where breeding sites remain relatively undisturbed. The forest is heavily hunted and is reported to have the highest use per acre of any North Carolina Wildlife Resources Commission game land. Big game species are primarily deer and turkey, with numerous small game and birds also hunted. Resident sport fish include yellow perch, catfish, redbfin pickerel, sunfish, small mouth bass, and large mouth bass.

✚ **Croatan National Forest** supports 46 mammals, 122 birds, and 94 reptiles and amphibians. Southern fox squirrel and Rafinesque's big-eared bat are considered locally rare. Black bear and white-tailed deer are the most popular big game species. Of the 94 reptiles and amphibians, 17 are frogs, 5 are toads, 17 are salamanders, 33 are snakes, 12 are turtles, and 10 are lizards. The diamondback terrapin, mimic glass lizard, Carolina gopher frog, eastern diamondback rattlesnake, and Carolina salt-march snake are recognized viability concerns.

Forest management activities in support of animal diversity include establishing grass/forb openings, creating early successional habitat, protecting special habitats and riparian areas, and selecting old growth restoration areas.

THREATENED AND ENDANGERED SPECIES

As of FY 1999, the following 11 animals and 14 plants listed T&E species occur or might occur on the Forests. Table 1-1 lists these species, the year of listing, status (T=threatened, E=endangered) and occurrence on the Forests.

TABLE 1-1. 1994 STATUS OF T&E SPECIES (N/P)

SPECIES	YEAR LISTED	1994 STATUS	ON FORESTS?
Appalachian Elktoe Mussel	1994	E	Occurs
Red Wolf	1967	E	Extirpated
Spotfin Chub	1977	T	Occurs
Peregrine Falcon	1970	E	Occurs
Eastern Cougar	1973	E	May occur
Carolina Northern Flying Squirrel	1985	E	Occurs
Spruce-fir Moss Spider	1995	E	May occur
Noonday Snail	1978	T	Occurs
Indiana Bat	1967	E	Occurs
Little-Wing Pearly Mussel	1988	E	Occurs
Virginia Big-eared Bat	1979	E	May occur
Spreading Avens	1990	E	Occurs
Swamp Pink	1988	T	Occurs
Dwarf-flowered Heartleaf	1989	T	May occur
Mountain Bluet	1990	E	Occurs
Mountain Golden Heather	1980	T	Occurs
Small Whorled Pogonia	1982	E	Occurs
Heller's Blazingstar	1987	T	Occurs

Bunched Arrowhead	1979	E	May occur
Mountain Sweet Pitcher Plant	1988	E	May occur
Green Pitcher Plant	1979	E	May occur
White Irisette	1991	E	May occur
Blue Ridge Golden Rod	1985	T	Occurs
Virginia Spirea	1990	T	Occurs
Rock Gnome Lichen	1995	E	Occurs

✚ During the period 1994 through 1999, **Nantahala/Pisgah** undertook actual restoration or recovery activities for Spreading Avens, Mountain Golden-Heather, and Heller’s Blazingstar. Remaining species, if found on the Forests, were monitored and received site protection.

✚ The only Federally listed threatened or endangered animal species known to exist on the **Uwharrie National Forest** is the Bald Eagle (proposed for delisting) which is an occasional visitor. The T&E plant species on the Forest is Smooth Coneflower, listed in 1992 .

✚ On the **Croatan National Forest**, endangered red-cockaded woodpecker is the object of intensive monitoring and recovery efforts. Bald Eagles also occur as occasional visitors. The only other T&E species found on the Forest is Rough-leaf Loosestrife, a flowering plant listed in 1987. Red Wolf (listed in 1967 and presumed extinct in the wild), Dwarf Wedgemussel (listed in 1990), and Sensitive Jointvetch (a plant listed in 1992) are listed as “may occur” on the Forest, but none have been found in surveys.

2. Historical Context - The Forests' Contribution to the Maintenance of the Productive Capacity of Forest Ecosystems

The LRMP goals related to maintaining the productive capacity of forest ecosystems:

- 1) A variety of silvicultural treatments are used to provide a continuous supply of wood products (with emphasis on high quality hardwoods for N/P Forests).
- 2) Utilization of mineral resources is provided in an environmentally sound manner.

FORESTRY

✚ For the N/P forests, upland hardwoods cover approximately 45 percent of the Forests, while cove hardwoods cover approximately 30 percent. The remaining 25 percent is made up of white pine, yellow pine, northern hardwood, and spruce fir communities. For C/U forests, loblolly, shortleaf, and longleaf are the major forest types on the Croatan, while the Uwharrie is about an even mix of hardwoods such as oaks and southern pine types such as loblolly and shortleaf.

✚ The predominant range of tree ages is from 70-90.

✚ Of the 1,024,902 acres of P&N National Forest land, 275,798 acres (27%) are suitable for timber production (see LRMP, p. E-7). For C/U, approximately 68,000 of the 210,000 acres (32%) are suitable for timber production.

✚ During the early 1990's, regeneration harvests produced 50-60 million board feet (MMBF) of timber for local markets. By the late 1990s that amount had dropped to 20-30 MMBF annually, and many acres were being thinned rather than regenerated.



FOREST BOTANICAL PRODUCTS

✚ While the LRMPs do not contain goals or desired conditions related to collecting and selling plants from the woods, the practice has a long tradition across the mountains of the Southern Appalachians.

✚ The two mountain Forests have administered a large program of issuing permits and collecting fees from collectors of botanical products. At the same time, studies are underway regarding sustainable levels of harvest and rates of growth and reproduction.

✚ Galax, moss, vines, ginseng, bloodroot, and black cohosh are among the most widely collected botanical products. Ginseng is thought to be much less prevalent than 100 years ago, while the comparative abundance of many others is not known.



Photo of Ginseng

MINERAL RESOURCES

✚ As of 1994 there were 5 active mine and lease areas on the N/P Forests. Olivine, limestone, dimension stone, and aggregate stone were the mining products.

✚ There was no oil, gas, geothermal, or other energy development within the Forests.

✚ A substantial amount of rock hounding was occurring for gem and mineral specimens including olivine, kyanite, gold, and a variety of semi-precious gemstones.

✚ Decades old abandoned mines were a safety concern.

SPECIAL REPORT – MAINTAINING PRODUCTIVE CAPACITY FOR WILDLIFE RESOURCES

The productive capacity of the Forests for wildlife is in part related to the ability of forest managers to provide a specified combination of habitat conditions to meet the needs of a wide variety of animal species.

For more information go to: <http://www.cs.unca.edu/nfsnc/monitoring2000/wildlife.pdf>.

3. Historical Context - The Forests' Contribution to the Maintenance of Forest Ecosystem Health and Vitality

FOREST HEALTH PROTECTION

✚ Forest insects, diseases, fire, and weather events such as wind, ice, and floods are important agents of change in ecosystems of the National Forests in North Carolina. The effects of non-native invasive species (NIS) of insects, diseases, and plants on ecosystem diversity, function, and productivity are often dramatic and devastating. Native insects and diseases are normal parts of forest ecosystems and the changes they bring about are usually gradual and sparsely distributed at large landscape scales. However, situations arise where even native insects and diseases can cause profound changes that are inconsistent with human values and expectations.

✚ The major native forest insects and diseases affecting the Forests are southern pine beetle (SPB) and oak decline. NIS plants, Gypsy moth, hemlock wooly adelgid, beech bark disease, butternut canker, and dogwood anthracnose are the major non-native agents of concern. As described previously, the non-native chestnut blight profoundly changed the character of the Southern Appalachian forests, virtually wiping out all but the root sprouts of what was once the most common tree in the woods.

✚ Large landscapes on the Forests are at risk for damage from these agents for a number of reasons: cohorts of similar-aged, mature upland oak stands that grew up after the elimination of the American chestnut are now affected by or susceptible to oak decline. Fire suppression and lack of regeneration harvests or thinning has resulted in dense, slow growing pine stands susceptible to SPB attack. Among NIS plants, species such as princess tree, Japanese honeysuckle and multiflora rose may push aside native species, and kudzu and oriental bittersweet can hinder tree regeneration as well.

AIR QUALITY

✚ Air quality is also a factor in ecosystem health. A uniform haze frequently blankets the mountains, largely the result of sulfate particles emitted by fossil fuel fired power plants generating the electricity we Americans use. Low-level ozone is another threat to air quality. It is primarily a by-product of automobile exhaust, and can affect the growth of some plants and trees and make breathing difficult for susceptible humans. One management action that may affect air quality is prescribed burning.

4. Historical Context - The Forests' Contribution to the Conservation and Maintenance of Soil and Water Resources

The LRMPs state two broad goals related to the conservation and maintenance of soil and water resources:

- 1) Riparian areas, floodplains, wetlands, and their existing ecosystems are perpetuated and enhanced.
- 2) Water quality and soil productivity are maintained.

WATER RESOURCES

Flowing through the Forests are 5,732 miles of perennial or intermittent streams. In addition to streams there are 35,950 acres of lakes and reservoirs. The streams and their banks, beds, and vegetation create a unique environment called the riparian ecosystem. The riparian area is habitat for a diversity of plants and animals. One of the mountain stream inhabitants – the cold water trout – is a treasured species for anglers. Trout require several habitat components: cold water, a gravel streambed that supports waterborne insects for food, and protection from predators. Streamside vegetation is critical for maintaining this habitat. For example, when a tree falls into a stream, trout can feed on insects attached to the tree's decaying, woody parts. The fallen tree and its limbs provide cover for the fish. Also, streamside vegetation acts as a barrier against soil loss and soil compaction.

Generally, water quality across the Forests has met or exceeded the State water-quality standards for fresh water. State reports at the time of the LRMPs did not specify any water quality limitations associated with national forest silviculture or other land management actions. However, in recent years a few stream segments have been identified as impaired due to erosion from nearby roads. These areas have been recognized as needing restoration activities.



SOILS

Soil productivity is interpreted as the capacity of a site to sustain forest growth – a capacity depending largely on the quality of the soil and a potential that can be altered by management. Site productivity is a function of climate, biotic potential, and soil. Productivity varies widely across the forests. The site features that are more readily affected by management include soil structure, organic matter, nutrients, and soil organisms. Historically, regulations and guidelines have addressed impacts from soil erosion, and measures are directed primarily toward preventing sediments from entering streams and other water bodies. Construction of roads, log landings, and skid trails are among the forest management activities that have the potential to contribute to erosion and sedimentation if proper erosion control procedures are not in place.

The LRMPs contains numerous standards and mitigation measures prescribed to prevent soil erosion and stream sedimentation. Also, in North Carolina, land-disturbing activities on the National Forests must comply with the intent of the North Carolina Sedimentation Control Act of 1973, which requires that measures must be sufficient to “restrain accelerated erosion and prevent visible sediment from entering intermittent and perennial streams and perennial water bodies.

5. Historical Context - Maintenance of Contribution to Global Carbon Cycles

This criterion is not currently monitored at the National Forest scale. Evaluations are underway to determine if there are appropriate indicators for national forests to monitor that would contribute meaningfully to a national evaluation.

6. Historical Context - The Forests’ Contribution to the Maintenance and Enhancement of Long-Term Multiple Socio-Economic Benefits to Meet the Needs of Societies

The LRMP contains two broad goals related to this criterion:

- 1) Protect the beauty of the Forests through special attention to visually sensitive areas and the careful application of resource management activities.
- 2) Provide different environmental and social settings for outdoor recreation opportunities that range from primitive to developed. Provide for a variety of recreational activities appropriate to these settings and the forest environment.

Provide all recreation visitors to the National Forests the opportunity to participate in activities and programs and use facilities to the highest level of access practicable.

SCENERY

✚ The inherent attractiveness of a landscape, along with its location, are used to categorize scenery throughout the Forests. In this way, a remarkable waterfall or gorge within sight of the Blue Ridge Parkway or the Appalachian Trail would require higher attention to scenery protection than would an unremarkable drainage not seen from established roads or trails.

✚ Road building, timber harvesting, wildlife improvements, recreation developments and some special uses are typical activities that may affect the scenery of the Forests. Developments on private land can have an even more dramatic and more long lasting affect to the scenery.

✚ During the 1980's, views of road construction and clearcut harvesting could be seen across the Forests. Members of the public found this objectionable, since it made the vistas appear less natural. The heavy reliance on clearcutting as the preferred regeneration method came under question, and this was addressed through NP LRMP Amendment 5 (1994) and changes to National policy. As a result, clearcutting was greatly reduced in favor of "two-aged" and "group selection" regeneration. The expected outcome would be that clearcut areas would blend in as the young stands got older, and new harvest areas would be less visible from the start.

✚ In years past, only occasional emphasis was placed on actual scenic restoration or enhancement such as treating overgrown viewpoints, clearing underbrush, or removing trash dumps.

RECREATION

✚ The National Forests in North Carolina receive heavy recreation use. On the Nantahala and Pisgah Forests, the heaviest use occurs along the NC 276 corridor through the Pisgah District. Other hot spots are the Curtis Creek and Wilson Creek areas, the Nantahala River, the US 64 corridor from Franklin to Highlands (Cullasaja Gorge), and parts of the Forests accessible from the Blue Ridge Parkway. On the Uwharrie, the heaviest use occurs along the fringes of Badin Lake. On the Croatan, the heaviest use occurs along the Neuse and White Oak River corridors.

✚ The type of recreation available in a particular area of the Forests depends in large part upon whether or not there are roads present, and if the roads are open to vehicular traffic. The types of recreation range from solitary backpacking and hunting in the most remote parts of the Forests, to high tech visitor centers, and everything in between.

✚ The original Forest Plans signed in the 1980's projected less emphasis on developed sites and more emphasis on "dispersed recreation" such as making loop hiking trails.

✚ Amendment 5 of the N/P LRMP(1994) placed additional acres into “backcountry” management, reinforcing the aim of dispersing recreation use across more areas, and away from high use areas. By increasing “backcountry areas” it was thought that some of the use could also be diverted from designated wilderness areas where the numbers of visitors were too high.

✚ Management also recognizes that disabled access was an issue to be dealt with in the developed sites.



Visitors on Accessible Trail - Roan Mountain

WILDLIFE RELATED RECREATION

✚ National forest lands are used heavily for wildlife associated recreational activities. The "1996 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation" reported that 947,000 days were spent by the public hunting and 2,336,000 days viewing wildlife on national forest lands in North Carolina.

✚ While the number of people hunting, which had declined over the past 5-10 years, has leveled off, a greater number of people are relying upon national forest lands for places to recreational hunt. In western North Carolina, fewer private lands are available to hunting, due to increased urbanization and a change in the type of residents moving into the area. Quality private lands are being leased for hunting rights. Conflicts between public hunters/recreational shooters on national forest lands and adjacent private property owners have grown more severe each year.

✚ National forest lands provide important areas for the public to view a wide array of wildlife species. With habitats stretching from 1800 feet elevation to over 6,000 feet, opportunities abound to view wildlife and their habitats. Each year, birders from all over the US travel to western North Carolina during the spring and fall months to view migrating and resident birds. Western North Carolina offers a unique opportunity to observe many rare and unusual birds.

✚ With the increased urbanization has come reduced opportunities for recreational shooting. The demand for public recreational shooting areas is growing each year. The forest currently provides two public shooting ranges on the Nantahala National Forest. These sites were developed and are operated as a cooperative effort with the North Carolina Wildlife Resources Commission and other private sport shooting organizations. No public ranges currently exist on the Pisgah National Forest.



HERITAGE RESOURCES

✚ The National Forests in North Carolina contain nearly 5,000 formally recorded heritage resources, prehistoric and historic archeological sites, historic structures, and traditional cultural properties. The types of sites are more diverse than the physiographic regions the forests occupy. These unique environments affected humans and were affected by humans for more than 10,000 years. Heritage resources contain invaluable data, they are a record of human use and environmental data, as well as offer opportunities for public enjoyment.

✚ The coastal plain **Croatan National Forest** is the earliest historically occupied Forest in NC. The naval stores industry, taking advantage of long leaf pine, operated here throughout the 18th century and was important to the early growth of the state and source of the nickname “Tar Heels.” Tar kilns found on the Forest warrant protection and interpretation. Rising sea levels had long before covered many of the earliest prehistoric sites, paleo-indian and early archaic. The largest prehistoric sites tend to be along the larger and deeper creeks and rivers where both aquatic and terrestrial resources were available. These sites are especially susceptible to shoreline and storm erosion, as well as recreational damage. Several civil war sites and early land conservation sites from the Civilian Conservation Corps located on the Forest are amenable to interpretation. Recent stabilization efforts were conducted in partnerships with East Carolina University and Appalachian State University.

✚ The piedmont **Uwharrie National Forest** is extremely rich in prehistoric and historic sites. It contains the volcanic stone used for tools by American Indians for 10,000 years throughout the southeast. The area is also known to have been traditionally used by the Catawba Indians. Recreation use, including Off Highway Vehicles (OHV), mountain bikes and horses on the Uwharrie makes site protection difficult. The area is well known for its archeological resources and illegal artifact collecting requires a significant amount of time for deterrence. The geology of the Uwharrie Mountains also led to America’s first (1799) gold rush. The Forest has scattered gold mines that range from small family operations to huge industrial sites. There is great interpretive potential here, but as of yet it remains untapped. Aided by Wake Forest University, early Scottish and African American settlements are currently being researched on the Forest.

✚ The mountain **Pisgah National Forest** was the first National Forest in the eastern United States. The first tract of land purchased under the Weeks Act, the Curtis Creek Tract, is located on the Grandfather Ranger District near Marion, NC. The Grandfather RD is located between the rolling piedmont hills and the Appalachian Summit, making for rich and diverse ecozones, used extensively and intensively during prehistoric and historic times. Both Cherokee and Catawba sites can be found here. NC’s most western known goldmine is also on the Forest. Other minerals like soapstone and

mica, used prehistorically and historically are found in the area. Illegal OHV use is one of the activities most affecting sites on the Forests in western NC.

✚ The Pisgah Ranger District includes the Cradle of Forestry, the Birthplace of American Forestry, a National Register of Historic Places site, a heavily used recreation destination with a visitor center. In addition to many prehistoric sites, the Pisgah includes contact (Spanish explorers) period and other early historic sites. Early Federal conservation efforts, CCC and FS, are evident throughout the Forest.

✚ The Appalachian Ranger District includes some of the rarest pictographs (prehistoric paintings) and highest elevation sites in western NC. The Cloudland Hotel, on Roan Mountain, was the first Victorian era resort in the region. Sources for material to make stone tools are unusually diverse in the area; quartz and quartzite, as well as less available chalcedony, jasper and chert can be found.

✚ The mountain **Nantahala National Forest** is similar to the Pisgah. However, its proximity to larger rivers and valleys made it a prehistoric and historic crossroad. The Eastern Band of Cherokee Indian Qualla Boundary is adjacent to the Nantahala National Forest. Some present day Indian lands are within the Forest. Many of the best known Indian “Mound Villages” are in close proximity to the Forest. These were visited by early explorers, including Spaniards and William Bartram. The Trail of Tears (1838) is located on the Wayah, Tusquitee and Cheoah Ranger Districts.

✚ Many important sites are located along the rivers and lakes on the Tusquitee and Cheoah RDs. Most are inundated, however, lowered lake levels erode sites and make them accessible to illegal looting. Many historic logging towns are found on the Nantahala National Forest. The Forest also contains more petroglyphs (rock carvings) than other areas.

✚ Public archeology and interpretation at the Appletree site on the Wayah Ranger District has continued for 10 years. Western Carolina University has been an invaluable partner in this initiative.

✚ The Nantahala National Forest includes some of the Forests’ most significant historic structures, fire towers and the 1916 Wilson Lick Ranger Station. As is true across the NFsNC, these need to be maintained and interpreted.

✚ The NFsNC continue to work closely with the four federally recognized tribes with an interest in local national forest management. These are Eastern Band of Cherokee Indians, Cherokee Nation, United Keetoowah Band of Cherokee, and Catawba Indian Nation.

7. Historical Context - The Forests' Contribution to the Framework for Conservation and Sustainable Management

 **Planning/NEPA.** The LRMP for Nantahala and Pisgah National Forests was signed in 1987, and significantly amended (Amendment 5) in 1994. The LRMP for Croatan and Uwharrie National Forests was signed in 1985. The Croatan draft plan revision was issued in FY 2000. Finalization of that revision is expected during FY 2001. Plan implementation has been proceeding at a variable rate and is documented in the Monitoring and Evaluation Reports.

While the Forests went for years with few management decisions appealed and rarely experienced litigation, that has recently changed. Virtually all management decisions that involve timber sales, and some other activities, are being appealed and in some cases litigated by entities whose stated goal is to eliminate timber harvesting on national forests. The Forests have generally done well in administrative appeals and litigation, but there have been instances where improvements were needed. Additional work is needed in the areas of consistency of documentation, and in evaluations of Management Indicator Species and Threatened, Endangered, and Sensitive species.

 **Conservation Education.** The Forest Discovery Center is the hub of on-site conservation education programs for the Forests. Programs designed to achieve specific curriculum objectives are presented to thousands of elementary students each year. Large numbers of additional interpretive programs and special events enable thousands of others to gain knowledge of forest ecosystems and the effects of human interactions with the environment. Outreach programs are conducted by ranger district and supervisor's office personnel and consist of conservation field days held in cooperation with other agencies, various school programs, teacher education, and a variety of specialized programs presented to requesting organizations.

 **Land Adjustment.** At the end of FY 99, the total acres of National Forest System land in North Carolina were 1,244,074 acres. Every year land trades and purchases have typically proceeded as opportunities become available, and when there is legislative and public support. Some objectives of the Land Adjustment program are to:

1. Consolidate property by acquiring inholdings when available and trading outlying parcels for adjacent parcels or administrative sites;
2. Acquire lands adjacent to the Appalachian Trail;
3. Acquire lands within the Chattooga watershed.

 **Infrastructure.** The Forests provide approximately 190 developed recreation sites including visitor centers, campgrounds and picnic areas capable of serving over 22,000 persons at one time; over 1,700 miles of trails, 2418 miles

of Forest roads, and numerous “semi-developed” dispersed campsites. There is always a backlog of maintenance work and upgrades to meet accessibility standards. Generally, some progress is made each year on upgrades and maintenance depending upon available funds. However, the road maintenance backlog is quite large.

For more information on lands, infrastructure, and other forest facts, go to <http://www.cs.unca.edu/nfsnc/facts/fy2000facts.pdf>

Chapter 2. FY 2000 Monitoring Results

Chapter II of this report will present the monitoring results through FY 2000 that pertain to the various elements of the environment discussed above. The chapter will be organized according to the goals of the Government Performance and Results Act (GPRA) that are also reflected in the Forest Service Strategic Plan. The applicable goals are:

- 1) Ecosystem Health
- 2) Multiple Benefits to People
- 3) Effective Public Service

Key Event(s) Affecting Management of the National Forests in North Carolina During FY 2000

The forest pest **southern pine beetle** (SPB) was in explosive outbreak status over most of the Pisgah and Nantahala National Forests. This development confirmed predictions from 1999 and 2000 trapping. This outbreak was unusual in that eastern white pine, not normally considered SPB host type, was being routinely attacked in addition to the other pine species. Populations of clerid beetles, SPB's main predator, were low, while numbers of SPBs in traps were unprecedentedly high.



Photo of southern pine beetle damage in Tennessee shows red-orange areas where pine trees have been killed.

In the past it has been well documented that aggressive control measures work to slow the destruction. However little or no control was attempted by the Forests in FY 2000 due to delays in completing the required environmental assessment. National forest managers in the mountains should anticipate continued outbreak conditions for FY 2001. Long term result of the outbreak is expected to be a widespread loss of pine communities from affected areas for the foreseeable future.

Monitoring Results Related to Ecosystem Health

ECOSYSTEM DIVERSITY

Goal (a.k.a. Desired Condition): Maintain, and where possible, enhance the diversity of plant and animal communities.

Monitoring Item	Results		
Creation of early successional habitat	National Forest	Regeneration/Early Successional Habitat in FY 2000 (acres)	Desired Annual Amount per LRMPs (acres)
	Nantahala/Pisgah	1,208	3,270
	Uwharrie	94	1050
	Croatan	0	combined
Selection of old growth restoration areas per plan direction	Early Successional Habitat Created Compared to Desired Level		
	Three projects were monitored. One project completely complied with plan direction, one project partially complied and one project showed no compliance. For the projects showing partial or no compliance, district personnel were informed of proper procedures.		
Status and management of major forest pests and diseases	Oak Decline: Oak decline continues to threaten large acreage across the Nantahala and Pisgah. Fifty plots in the Grassy Gap and Wesser area of the Cheoah Ranger District were monitored during FY 2000 to determine composition of regeneration in stands harvested as a treatment for oak decline. Preliminary results suggest that oak composition is decreasing in oak decline areas that go untreated, but that oak composition in regenerated stands can be maintained with appropriate management actions.		

Monitoring Item	Results
	<p>Gypsy Moth: The National Forests in North Carolina remain uninfested, with the last outbreak detected in 1996 and successfully treated. In recent years encroachment from the north was slowed due to fungal disease epidemics in gypsy moth populations. However, populations show recent signs of increasing and suppression activity in infested areas will be up in 2001.</p>  <p>Butternut Canker and Dogwood Anthracnose have changed little in distribution in North Carolina in the past 5 years</p> <p>Distribution of Hemlock Woolly Adelgid has increased during the last 5 years, but does not yet threaten trees in National Forest System land.</p> <p>See complete report at http://www.cs.unca.edu/nfsnc/monitoring2000/pests.pdf .</p>

Goal (a.k.a. Desired Condition): Attributes and resources of special interest areas including wilderness, research natural areas, and areas registered by the North Carolina Natural Heritage Program are maintained.

Monitoring Item	Results
Status of Wild and Scenic Rivers	A 23.3-mile segment of Wilson Creek in Caldwell and Avery County was designated a Wild and Scenic River. The two other designated rivers on National Forest lands in North Carolina are the Chattooga River and the Horsepasture River. The Forest worked closely with the County Commissioners and Congressman Ballenger.

SPECIES DIVERSITY

Goal (a.k.a. Desired Condition): Maintain viable populations of existing native wildlife, fish, and plants. Threatened and endangered plant and animal species are protected, managed or recovered consistent with the Endangered Species Act; and sensitive species are conserved.

Monitoring Item	Results
Habitat and population status of Management Indicator Species (MIS)	<p>Black Bear: Populations are currently stable or increasing. For more information go to http://www.cs.unca.edu/nfsnc/monitoring2000/bear.pdf.</p> <p>White-tailed deer: Populations relatively stable in the central and southern mountains. Populations are increasing on private land and decreasing on national forest land. For more information go to http://www.cs.unca.edu/nfsnc/monitoring2000/deer.pdf.</p> <p>Eastern Wild Turkey: Populations currently on an upward trend statewide with the greatest increases in the western part of the state. For more information go to http://www.cs.unca.edu/nfsnc/monitoring2000/turkey.pdf.</p> <p>Trout: Eleven streams on Nantahala and Pisgah National Forest have been monitored since 1989. Populations are highly variable between years, correlating to climatic conditions such as drought and flood more than to land management activities. For more information go to http://www.cs.unca.edu/nfsnc/monitoring2000/fish.pdf.</p> <p>Northern flying squirrel: The most recent monitoring study was completed in FY 1999, however results are not yet available. For more information go to http://www.cs.unca.edu/nfsnc/monitoring2000/nfsquirrel.pdf.</p> <p>Peregrine Falcon: During FY 2000, 9 pairs were present at monitored sites on Pisgah and Nantahala National Forests. Three of these pairs produced 8 young. The reproductive rate continues to be very low. For more information go to http://www.cs.unca.edu/nfsnc/monitoring2000/falcon.pdf.</p>

Monitoring Item	Results
	<p>Cave-dwelling bats: Population trend information is inconclusive. See more about bats at http://www.cs.unca.edu/nfsnc/monitoring2000/bats.pdf.</p> <p>(See complete report at http://www.cs.unca.edu/nfsnc/monitoring2000/mis.pdf)</p>
<p>Brook Trout Genetic Analysis in the Upper French Broad River System</p>	<p>Pure Southern strain brook trout populations are found in most remote areas, while easily accessible streams were historically stocked with Northern strain fish. The extensive rail system associated with historical logging provided access to many Forest streams that now appear to be remote and explains some anomalies in distribution. For more information go to http://www.cs.unca.edu/nfsnc/monitoring2000/fish.pdf.</p>
<p>Odonate Diversity on the Croatan National Forest</p>	<p>Adult and nymphal odonates were collected from 18 sites during FY 2000. Thirty-nine species of odonates were collected, suggesting an excellent species richness. This is likely a reflection of the wide variety of aquatic and terrestrial habitats on the Croatan National Forest. For more information go to http://www.cs.unca.edu/nfsnc/monitoring2000/odonata.pdf.</p>
<p>Anadromous and Catadromous Fish Species Utilization of the White Oak River System</p>	<p>Twelve station along the White Oak River and major tributaries were sampled during FY 2000. Four anadromous and one catadromous species were positively identified. Preliminary analysis indicates the area may be important as over-wintering habitat for anadromous species, rather than for spawning and juvenile rearing. For more information go to http://www.cs.unca.edu/nfsnc/monitoring2000/fish.pdf.</p>
<p>Progress being made toward recovery of T&E Species</p>	<p>For the 31 Threatened and Endangered species that occur or may occur on the National Forests in North Carolina, the following actions took place during FY 2000:</p> <ul style="list-style-type: none"> Coordination with US Fish & Wildlife Service, TVA monitoring – 3 species Monitoring – 4 species Site protection – 11 species Habitat protection/restoration – 4 species

Monitoring Item	Results
	<p data-bbox="596 256 1331 328">New populations found – 1 species (Virginia Spirea) Special surveys – 2 species</p> <p data-bbox="596 363 1365 435">For more information go to <a data-bbox="596 399 1365 435" href="http://www.sc.unca.edu/nfsnc/monitoring2000/t&e.pdf">http://www.sc.unca.edu/nfsnc/monitoring2000/t&e.pdf .</p> <div data-bbox="995 493 1377 548" style="border: 1px solid black; padding: 2px; display: inline-block;">Photo of Virginia Spirea</div> 

SPECIAL REPORT - *Lysimachia asperulifolia* - Croatan Ranger District

Lysimachia asperulifolia is a southeastern coastal plain endemic plant species found in North and South Carolina. There are only nine rough-leaved loosestrife populations known worldwide; eight are in North Carolina. One of these occurs on the Croatan National Forest. This federally endangered species is associated with sandy or peaty soils and moist open habitat. This type of habitat is found in the narrow zone between longleaf pine savannas and wetter, shrubby pocosin communities. A large variety of other plant and animal species are also found in this zone that is called the “ecotone.” Soils that support pine savanna and pocosin often occur in a mosaic and this creates extensive ecotones where loosestrife could occur. However, unless these areas are kept open and have little shrub competition, loosestrife will not become established and existing populations may be locally eliminated. The open character of this habitat is maintained by periodic fires.

Rough-leaved loosestrife was first collected in North Carolina by Jean Louis Marie Poiret in 1814 and in South Carolina near Columbia in 1917 by J. Herbemont. Of the 17 historical sites documented at the time the species was federally listed, eight have been extirpated (locally eliminated). In 2000, the National Forests in North Carolina began a cooperative study with the North Carolina Plant Conservation Program and other landowners having loosestrife populations to monitor population levels, determine population trends, and to evaluate the range-wide status of the species.

The Croatan National Forest has eight subpopulations of Rough-leaved loosestrife. In August of 2000, two of these subpopulations were revisited, their total extent determined, and permanent transects were established using metal stakes and witness trees so that future measurements could be taken. The subpopulations were found to be small, only 56 and 156 square meters each (1/10 and 4/10 of an acre). One subpopulation had about 900 individual loosestrife plants, the other had about 1500 plants. In 2001, both areas will be re-measured and new monitoring plots will be established in additional subpopulations. By continuing to monitor change in each subpopulation, a trend for the entire Rough-leaved loosestrife population on the Croatan National Forest will be determined. In addition, management activities, especially prescribed burning, will be documented for each subpopulation and analyzed to determine its effect on each subpopulation. This evaluation will be used to recalibrate, if necessary, the intensity and timing of prescribed burning in this unique ecotone habitat.



Photo of Rough-leaved loosestrife

WATERSHED CONDITIONS

Goal (a.k.a. Desired Condition): Riparian areas, flood plains, wetlands, and their existing ecosystems are perpetuated and enhanced. Water quality and soil productivity are maintained.

Monitoring Item	Results
Treatment of impaired streams	<p>Wash Creek was listed as impaired on the State's 303d list in April of 1998. Wash Creek road (FS 479) has undergone some sediment runoff controls. Completion of the Wash Creek runoff control project is expected in FY2001 as part of the on-going North Fork Mills River runoff control project. Wash Creek is a tributary to the North Fork Mills River. Wash Creek has now been removed from the 303d list.</p> <p>Two other streams largely on federal land are currently on the 303D list, with low priority. Harper Creek is shown for "historical listing for sediment." Any current sediment problem may be from nearby recreational-use trails. Hurricane Creek is on the 303d list based on "anecdotal information," and the State will monitor to confirm impairment. If water is currently impaired, it may be due to sediment loss from access roads.</p> <p>Sediment runoff controls were completed on the Fletcher Creek and Spencer Branch Trails. Approximately 4 miles of the trails were completed for runoff controls. The confluence of Fletcher Creek and Spencer Branch flows into the Hendersonville Reservoir where the North Fork Mills River begins.</p> <p>On the South Fork Mills River trail systems (i.e. South Fork Mills, Cantrell, Mullinax, Bradley, and Wolf Ford Trails), runoff controls were completed in FY2000. Approximately 15 miles of trails were completed for runoff controls. Runoff controls on the Wolf Ford trailhead parking lot near the old USGS gaging station were improved in FY2000. A few dispersed campsites in various places along the South Fork Mills River may undergo improvements for runoff controls in FY2001 with the help of the Pisgah district recreation planner. Another proposed runoff controls project within the South and North Fork Mills River watershed systems will be the Yellow Gap road runoff</p>

Monitoring Item	Results
	<p>controls project slated for completion in FY2001.</p> <p>Monitoring of streams for sediment concentrations continues on the Tellico River in conjunction with the help of the TVA. From June 1998, through December 2000, 97 samples have been collected. Over this period the amount of total suspended solids has been dramatically reduced through implementation of Best Management Practices inside the Off Highway Vehicle area. Actions such as certain trail closures, trail relocations, and culvert, bridge, and riparian area restoration have proven effective at reducing sediment transport to area streams.</p> <p>For more information go to http://www.cs.unca.edu/nfsnc/monitoring2000/water.pdf.</p>
Acid Deposition	<p>Seventy-five streams were monitored in FY 2000. During the two sampling periods (spring and summer), no stream pH values less than 5.0 were observed. Most streams supported pH values between 6.5 and 7.5, which is considered optimum for biological communities such as insects and trout.</p> <div data-bbox="592 1107 1092 1214" style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Photo of Newberry Creek, at the sample site for the Western North Carolina stream acidification</p> </div> 

Monitoring Item	Results
Reference Stream Characterization	<p>Twenty-four streams were surveyed in FY 2000. An additional 24 streams will be surveyed in FY 2001 before data is analyzed.</p>
Changes in Land Productivity	<p>Soil and water improvements were accomplished on approximately 51 acres. This work included closure/restoration on more than 16 miles of old roads or trails; several miles of open road runoff control; and 1200 feet of shoreline stabilization on Chatuge Lake, at Jackrabbit recreation area, in partnership with the Tennessee Valley Authority.</p> <p>There were no events during the reporting period that qualified for emergency response and initial treatment to restore land productivity. However, further treatment, maintenance, and/or monitoring prior to project release were still ongoing on projects initiated in response to events during the previous reporting period: (1) the South Table Rock Fire; and (2) storm damage in the Hickey Fork and Little Laurel watersheds. The burned area was treated using Burned Area Emergency Rehabilitation funds; monitoring was continuing through FY00. The storm damaged area received treatment funded by Emergency Watershed Protection and other funds; a final report was submitted during FY00. Overall, treatments in both projects were moderately effective.</p> <p>LRMP Implementation Monitoring over the past three-year period focused on the extent of soil disturbance associated with ongoing activities, primarily randomly selected timber sales. Post-activity monitoring on the <u>Pisgah National Forest</u> and the <u>Uwharrie National Forest</u> indicated that soils were disturbed on a relatively small percentage of the total area of most activity units. Further, most of the disturbed area that was tallied was associated with the transportation system and/or log landings—areas that are routinely treated and restored to productive use following the activity—and small, widely scattered areas within the general harvest area itself.</p> <p>Further information is available at http://www.cs.unca.edu/nfsnc/monitoring2000/soils.pdf.</p>

AIR QUALITY

Photo of Cold Mountain. Visibility is best (left half) when fine particle mass is low. The worst (right half) visibility occurs when the fine particle mass (especially sulfates) is high. Visibility is poorest in the summer months when sulfate particles have their greatest abundance.



Monitoring Item	Results
Ozone	Vegetation at higher elevations is exposed to more ozone than vegetation growing elsewhere.
Particulate Matter	Particulate matter concentrations are below levels of concern for human health.
Visibility	Visibility impairment is greatest in the summer months, whereas the best visibility conditions occur in the winter. Sulfate particles comprise the majority of the fine particle mass thought to cause the visibility impairments.
Prevention of Significant Deterioration applications	Two PSD applications were reviewed, one for a power generation facility and one for a high density fiberboard plant. For more information go to: http://www.cs.unca.edu/nfsnc/monitoring2000/air.pdf .
Monitoring Item	Results
Fuels Reduction	Seven prescribed burns were monitored using photopoints for before and after visual changes in fuels. Post burn observations are not yet complete and will be reported in the FY 2001 M&E Report. For more information go to http://www.cs.unca.edu/nfsnc/fire.pdf .

Monitoring Results Related to Multiple Benefits to People

OUTDOOR RECREATION

Goal (a.k.a. Desired Condition): Protect the beauty of the Forests through special attention to visually sensitive areas and careful application of resource management activities.

Monitoring Item	Results
Scenery being maintained or enhanced.	<p>Scenery rehabilitation during FY 2000 included the following:</p> <ul style="list-style-type: none"> Scenic vistas along the Cherohala Scenic Byway.

Goal (a.k.a. Desired Condition): Provide different environmental and social settings for outdoor recreation opportunities that range from primitive to developed. Provide for a variety of recreational activities appropriate to these settings and the forest environment. Provide all recreation visitors to the National Forests the opportunity to participate in activities and programs and use facilities to the highest level of access practicable.

Monitoring Item	Results
Amount and Types of Recreation Use	<p>The types of recreational activities enjoyed by forest visitors were unchanged during the past year. The most popular activities continue to be driving for pleasure, picnicking, hiking, camping, and a wide variety of trail uses. Hunting and fishing continue to be popular, along with whitewater rafting and rock climbing. The National Forests in North Carolina continues to be the most visited National Forest in the Eastern United States. In order to better serve visitors, improvements have been made in the quantity and quality of opportunities at specific sites across the forest.</p> <p>Overall, recreation use was up during FY 2000 due to good weather, and an</p>

Monitoring Item	Results
	<p>increasing area population. In response, we are trying to improve maintenance on our existing sites and trails, upgrade outdated facilities and, where funding is available, construct new trails and facilities.</p> <p>For more information go to http://www/cs/unca/edu/nfsnc/monitoring2000/recreation.pdf .</p>
Disabled Hunter/Angler Activities	During FY 2000, two special fishing days were held – one for disabled children and one for seniors. The Disabled Hunter Program had 174 participants during the year.

FORESTRY/SILVICULTURE

Goal (a.k.a. Desired Condition): A variety of silvicultural treatments are used to provide a continuous supply of wood products with emphasis on high quality hardwoods.

Monitoring Item	Results		
Timber Stand Improvements, FY 2000	FOREST	METHOD	ACRES
	Croatan/Uwharrie	Release	171
		Prescribed Burning	301
		Fertilization	176
		Pre-Commercial Thinning	119
	Nantahala/Pisgah	Release	1,350
		Pre-Commercial Thinning	362
		Pruning	95
	TOTAL		2,574

Monitoring Item	Results		
Acres Harvested in FY 2000 by Method, and LRMP Projected Harvest	NANTAHALA/PISGAH		
	Method	FY 2000 Harvested Acres	LRMP Projections
	Clearcut/Shelterwood	52	235
	Two-Aged	1,093	2,532
	Uneven-Aged	63	500
	Thinning	446	-
	Salvage	60	-
	TOTAL	1,741	3,267
	CROATAN/UWHARRIE		
	Method	FY 2000 Harvested Acres	LRMP Projections
	Clearcut/Shelterwood	0	873
	Two-Aged	94	0
	Uneven-Aged	0	0
	Thinning/Salvage	318	560
TOTAL	412	1,433	
Status of Timber Sale Volume in Relation to LRMP Maximum – FY 2000	Allowable Sale Quantity (ASQ)		
	Volume Offered	Volume Sold	
	Nantahala/Pisgah 6.6 MMCF*/year	0.699 MMCF	0.655 MMCF
	Croatan/Uwharrie 1.8 MMCF/year	0.960 MMCF	0.542 MMCF
TOTAL = 8.4 MMCF/Year	1.660 MMCF	1.196 MMCF	
*MMCF = Million Cubic Feet			

Monitoring Item	Results		
Silviculture Treatments Accomplished in FY 2000 by Funding Source	TREATMENT	KNUTSON- VANDENBERG ACRES	APPROPRIATED ACRES
	Tree Planting	355	394
	Site Prep for Natural Regeneration	1,101	301
	Site Prep for Planting	377	192
	Timber Stand Improvement	594	1,980
	TOTAL ACRES	2,427	2,867

FOREST BOTANICAL PRODUCTS – SPECIAL REPORT

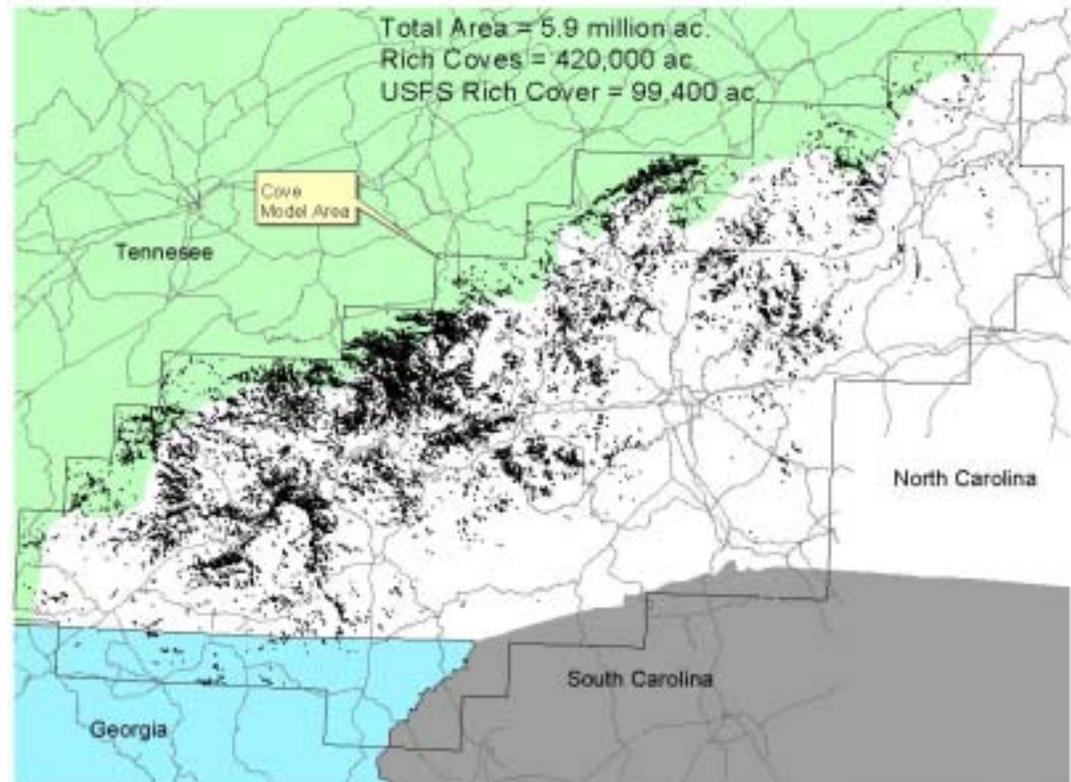
Modeling Rich Cove Habitats: Rich cove forests in the Southern Appalachians contain a diverse mixture of species that are currently collected for their medicinal value. However, little is known about the sustainable harvest level of these species. *Panax quinquefolius*, ginseng, has the highest value and the longest harvest history of all medicinal products. It is found almost exclusively in rich coves and other mesic forest types.

The first step in assessing harvest sustainability is to determine the distribution of the collected species or the habitats where they grow. Habitat modeling was used to identify and map environments that could potentially support rich cove forests. Species and plant community data were analyzed from over 2300 permanent plots located throughout the Southern Appalachians. For each plot, we evaluated the presence or absence of important species used to indicate rich cove habitats. Multiple logistic regression was used to differentiate the rich cove plots from the other plots using 25 different environmental variables. Seven environmental variables were found to be important in distinguishing rich coves: landform index (site protection measure), distance from the piedmont, slope, growing season rainfall, elevation, geology, and dormant season rainfall. From these relationships, a model was developed to predict the occurrence of rich coves in the Southern Appalachians in North Carolina. The model, in theory, can correctly predict the absence of rich coves 90% of the time, and correctly predict their presence 51% of the time.



Maps of the predicted locations of rich coves were created and random locations were visited in the field to test the model. Only those sites with at least 50% probability of rich cove occurrence were evaluated. Thirty-by-thirty meter plots were sampled at 73 separate validation sites distributed across the Nantahala and Pisgah National Forests. The occurrence of 10 closely associated cove plant species were used to determine the presence of suitable cove habitat. The model correctly predicted the location of rich coves 51% of the time. Most areas that were incorrectly classified were in closely related habitats such as mesic hardwood forests and acidic coves. Acidic coves occur in similar topographic positions as rich coves but support a dense shrub layer dominated by rhododendron (*Rhododendron maximum*) with only a sparse herb ground cover. The model under-represented cove landscapes having high-base rocks that provide favorable nutrients for rich coves. Higher resolution geology maps can be used in the future to better define these areas.

In addition to model validation, the random plots were used to begin evaluation of the health of ginseng populations in rich coves. Ginseng was located in 27 plots and its age-class and abundance determined. From this sample it was estimated that, on average, 12 harvest-age ginseng plants per acre occur in rich coves. However, ginseng was absent in one-third of the rich coves when the other plant indicators were present. Most of these sites were accessible by roads or trails and it is suspected that this species has been eliminated from these sites due to over-harvest. Future work will include refining the model and further validation and assessment of ginseng populations.



HERITAGE RESOURCES

General Direction: Heritage Resources, which are listed on or eligible for the National Register of Historic Places or the National Register of Historic Landmarks, are protected. Suitable sites are developed and/or interpreted for public use and enjoyment.

Monitoring Item	Results		
Heritage Resource Sites Identified in Relation to Acres Surveyed		Sites Identified	Acres Surveyed
	FY 2000	135	2,392
	TOTAL	4,606	160,815
Tribal Relations	<p>For more information on Heritage Resources go to http://www.cs.unca.edu/nfsnc/monitoring2000/archeology.pdf</p> <p>Among FY 2000 activities were: initiated a Challenge Cost Share agreement to inventory sites associated with the Trail of Tears; developed a free use permit for collection of white oak for traditional uses; developed plans to inventory traditional cultural properties and sacred sites; began identification of forest products that Cherokee are interested in for traditional uses.</p>		
Site Protection	<p>Of seventy-seven sites monitored, four showed evidence of deterioration; three due to eroding roads, and one due to vandalism. Some additional sites look vulnerable and will be recommended for excavation.</p>		
Site Development/ Interpretation	<p>The Forest is working on interpretive developments at an African American Civilian Conservation Corps Camp on the Croatan National Forest and at a historic settlement along a bicycle trail in the Nantahala Gorge. The Appletree site on the Wayah Ranger District of Nantahala National Forest continues to be excavated through the Passport-In-Time program. A Challenge Cost Share Agreement with Wake Forest University began to identify sites ion and adjacent to the Forest, related to the Underground Railroad.</p>		

Monitoring Results Related to Effective Public Service

Monitoring Item	Results
Facility/Trail Improvements/Maintenance	<p>The Fee Demonstration Program continues to support forest recreation. As appropriated funding has dropped over the last decade, the fee demo program has become increasingly important in allowing the forest to maintain existing services and fund site improvements. In FY 2000, the \$800,000 collected in fee demo helped to fund the following projects:</p> <ul style="list-style-type: none"> • Ferebee Recreation Area: A new toilet (Wayah). • Tsali Campground: Reconstruction of campsites (Cheoah). • Cedar Point Campground : A new dump station (Croatan). • Brown Mountain OHV Area: A new well drilled (Grandfather). • Appletree Campground: A new picnic shelter (Wayah). • Wayehutta OHV Area: A new toilet (Highlands). • Whitewater Falls: New tables and a picnic shelter (Highlands). • Jackrabbit Campground: Upgraded the sewage treatment plant (Tusquitee). <p>During the FY 2000, work also was accomplished at several other recreation facilities:</p> <ul style="list-style-type: none"> • Completion of the Flintlock Rifle Range (Uwharrie). • Work began on the new 40-site Cane Break Horse Camp (Uwharrie). • The Badin Lake Recreation Area access road was paved with assistance from NC DOT (Uwharrie). • The Tsali Recreation Area access road was paved with assistance from NC DOT (Cheoah). • The Walton Nature Trail was completed in the Alarka Laurel area (Wayah). • Work began on the Wine Springs Horse Trail (Wayah). • Work began to construct a toilet at the Dirty John Shooting Range (Wayah). • A major trail reconstruction and bridge replacement project at Upper Tellico OHV area (Tusquitee). <p>A major trail improvement project was started in the Mills River area (Pisgah).</p>

Monitoring Item	Results
Land Adjustment in Support of LRMP Goals	<p>A \$30,500,000.00 backlog remains in facility maintenance for health and safety purposes and necessary upgrades for accessibility.</p> <p>Several significant land acquisition projects were completed during the past year: <u>Chattooga Watershed.</u> Six parcels totaling 86 acres were purchased during 2000 in the Chattooga Watershed area on the Highlands Ranger District. The Chattooga purchase program, begun in 1992, is a multi-state project involving National Forests in North Carolina, South Carolina and Georgia. The program's goal is to protect this significant watershed which includes a federally designated Wild and Scenic River (the Chattooga River), unique rock bluffs which are home to several federally listed plant and animal species, and a federally designated Wilderness (Ellicott Rock).</p>  <p style="text-align: center;">Chattooga Watershed</p> <p><u>Appalachian Trail.</u> 7 parcels totaling 142 acres were purchased or exchanged during 1999 to protect the Appalachian Trail. 305 miles of the 2,150-mile National Recreation Trail pass through North Carolina. The program goal is to protect the trail and adjacent areas so it can continue to provide hikers with a unique recreation experience.</p> <p><u>Other Projects.</u> 1,473 acres of land on the Thompson River was purchased from Duke Energy Corp., along with the acquisition of two inholdings totaling 62 acres.</p>

Monitoring Item	Results
Special Uses Compatible With LRMP Goals	<p data-bbox="590 253 1354 435">Special use authorizations allow for the use of National Forest System lands for a wide variety of purposes. Some authorize facilities and services necessary for public health, welfare and safety while others authorize uses of a private nature.</p> <p data-bbox="590 472 1354 727">In North Carolina we have approximately 1,275 permits authorizing uses ranging from small spring developments and driveways to major federal highway systems and gas pipelines. Of these permits, approximately 895 are for land-based uses and 380 permits are for recreation activities such as outfitting, guiding and whitewater rafting.</p> <p data-bbox="590 764 892 800">Key projects include:</p> <ul data-bbox="646 805 1354 1089" style="list-style-type: none"> <li data-bbox="646 805 1354 873">- 40 NC Department of Transportation Projects for the improvement of existing public roads. <li data-bbox="646 889 1354 1036">- Three Federal Highway projects for major multi-lane systems - Havelock Bypass (Croatan), Corridor K (Cheoah), Interstate 26 (Appalachian). <li data-bbox="646 1052 1787 1089">- Replacement of WLOS tower on Mt Pisgah to accommodate digital television. <p data-bbox="590 1105 1837 1252">Program emphasis will continue to be the monitoring of existing uses to ensure they are operated and maintained with minimal impact on the land. New applications are managed to ensure they are consistent with the Forest Land and Resource Management Plans and Forest Service Regulations.</p>



Photo of Electronic Site under special use permit

Monitoring Item	Results
Resolution of Health & Safety Issues	<p>FA&O facilities are overall in fairly good condition in that all imminent and serious danger problems are funded and repaired. There still exists a need for more funding to take care of preventative maintenance, accessibility, and non-serious danger problems.</p>
Road Inventory	<p>In FY 1999 and 2000 the forest completed a survey of approximately 100% of its maintenance level 3, 4 and 5 roads and over 50% of its maintenance level 1 and 2 roads*. This was done as part of the National direction to obtain up-to-date data on deferred and annual maintenance needs, and to identify required capital improvements. All of this information has been loaded into Infra and upward reported to the Washington Office for program management and funding purposes. This information will be a valuable tool in implementing and accomplishing the Road Analysis Program.</p> <p>* For a complete definition of Maintenance Levels see Forest Service Handbook 7709.58,12.3, Ex.01.</p>
Road Improvements/Maintenance	<p>The overall condition of the forest's classified road system remains fairly constant, i.e. the forest is not funded to the degree necessary to operate and maintain these roads to the level they were designed for. The forest receives approximately 15% of what is needed for annual road maintenance and approximately \$15,000,000 is now required to sufficiently take care of existing deferred maintenance requirements on this forest.</p>
Road Initiatives	<p>The forest continues to decommission roads which are no longer required for forest management and/or are causing significant environmental damage, and when funding is available to do so. Most of the decommissioning has taken place on "unclassified" old woods roads. In FY 2000, eight road miles were decommissioned.</p> <p>The last twelve months have seen several new initiatives begun in Washington that will influence future operation and maintenance of the forest road program. These initiatives include the Road Analysis program, and the Forest Service Public Road Program. The Road Analysis Program will be an integrated ecological,</p>

Monitoring Item	Results
Project Implementation Monitoring	<p>social and economic approach to transportation planning, and addressing problems on existing roads. The implementation of the Road Analysis will begin in FY 2001 and be a permanent part of the forest's planning process.</p> <p>The Forest Service Public Road Program is now in the developmental stage. The Program is expected to be approved and funded within the next Highway Bill (FY 2003). The Program will allow the Forest Service to designate a large number of roads as "public roads" and, in doing so, receive fuel tax funds that are directly tied to the use of national forests and grasslands. These funds will be used to better operate and maintain the forests transportation system.</p> <p>Three project reviews took place during FY 2000. Two aspects of implementation were evaluated: adequacy of NEPA documentation and adequacy of implementation on-the-ground. Results indicate a need to address NEPA documentation deficiencies. Implementation compliance was generally good, though there were instances where room for improvements were noted.</p>

Chapter 3. Evaluation and Action Plan

This chapter provides a synthesis and interpretation of what monitoring reveals about the current contribution of the National Forests in North Carolina towards the GPRA Goals of Ecosystem Health, Multiple Benefits to People, and Effective Public Service.

Ecosystem Health

- ✚ Factors associated with Ecosystem Health include: biodiversity; the status of insect pests, diseases, and non-native invasive plants; water quality, soil productivity, and air quality. Monitoring shows the Forests retain their high biodiversity in terms of both species and communities. The forests have not lost species or communities in recent years. Indeed, new populations of species continue to be discovered. However, there are long-term biodiversity concerns, mainly due to the numerous insect pests, diseases, and invading foreign plant species. While most of these are now only marginally affecting the forest, some could be real threats in the future. The non-native insects and especially the introduced fungal diseases probably have the most potential for changing the species composition of the forest. Dogwoods and butternuts are two tree species whose future is bleak due to fungal diseases.
- ✚ Southern pine beetle has widespread effects every few years, and large acreages of biologically mature oaks are vulnerable to oak decline. These are both caused by agents native to southern forest ecosystems and as such, as natural parts of those ecosystems. Some observers minimize the threat these agents present because of their native origins, but this ignores the persistent nature of the changes they can cause in forest landscapes that are at odds with human values as expressed in the Nantahala-Pisgah LRMP.
- ✚ There is general agreement about the need for additional information regarding many species. One group particularly noteworthy is the “forest botanicals”; those collected for use in herbal medicine, the floral industry, or as food. Information is needed as to the prevalence of the various species, their reproductive rates, and to determine a sustainable level of collection. A study begun in FY 2000 is beginning to provide this knowledge.
- ✚ Water quality is good across the forests, and restoration work has occurred on the few roads identified as perpetual sediment sources to nearby streams. The roads in question are of long standing and provide access to adjacent private lands, so they cannot be decommissioned. Overuse by visitors in areas such as streamside campsites and

trails causes some soil compaction, loss of streamside vegetation, and potential contamination of waterbodies. However the amount of area affected is very small in relation to the entire amount of streamside area.

✚ Air quality varies quite a bit by the seasons, but there are definite visibility impairment issues due to particulate matter in the summertime, primarily caused by sulfates from coal fired power plants and automobile exhaust.

Multiple Benefits to People

✚ The items associated with this GPRA Goal are: scenery, recreation, forest products, and heritage resources. In regard to scenery, most views of the Forests, whether by car, from a trail, overlooks, or the air, are of a closed canopy forest. The Southern Pine Beetle outbreak will have impacts to the scenery as in some areas vistas will include swaths of dead pine trees. In some high-use recreation areas the overstory canopy has died and will have to be removed, thus changing the nature of the recreation experience in those areas.

✚ The number of highly scenic areas such as waterfalls and river gorges has actually increased through land acquisitions in recent years. And since waterfalls are big visitor attractions, it's fair to say that opportunities for quality outdoor recreation have increased in recent years.

✚ In the area of forest products, it is a less rosy picture. In FY 2000, slightly more timber was harvested than FY 1999, but still much less than in the years prior to FY 1999. Discovery of the Indiana Bat, loss of the ability to use Categorical Exclusions for timber sale documentation, unfilled positions in planning and NEPA and silviculture, lawsuits and appeals all contributed to low timber sales. Many of these factors will carry over into FY 2001. A bright note in regard to forest products is the high amount of timber stand improvement work being conducted. This will be a good investment for the long-term.

✚ The N/P Forests continue to provide a wide variety of Forest Botanical Products to collectors who use these goods for both personal and commercial purposes. The upsurge in popularity of medicinal herbs, as well as the changing demographics of collectors, has generated concern among forest managers

✚ Heritage Resources survey work continues to uncover more archeological sites, including significant finds. However numerous sites are vulnerable to loss from natural processes and human activities.

Effective Public Service

✚ Factors contributing to this goal include the condition, safety, and accessibility of facilities, roads, and trails; land adjustment and special uses. Over time and with more and more public use, there is a constant backlog of facility improvements that are needed. Maintaining adequate, functional, and pleasant toilet facilities is a constant challenge. Every year we make progress in upgrading campsites, visitor centers, and other facilities, but there will always be more to do. Much of the work during FY 2000 occurred in support of the priority areas defined by the Natural Resource Agenda, especially Outdoor Recreation and Healthy Watersheds. By improving trails and campsites adjacent to streams and rivers, and improving the condition of water based recreation facilities, we are able to address the quality of the recreation experience and the water quality issues at the same time. The Fee Demo Program has increased our ability to upgrade facilities.

✚ In regard to land adjustment, support from legislators and the public is essential for the Forests to consolidate the land base, and to add significant tracts that may come on the market. Currently, land acquisition is active on the Forests and generally well supported by the public, though it can be quite complicated. The program to acquire tracts adjacent to the Appalachian Trail has made great strides and is approaching completion. More land within the Chattooga watershed is still desired, and appropriate forest parcels in other areas become available each year.

✚ Administering special uses takes a huge amount of time, and can produce some of the most difficult situations to deal with. With an annual growth rate of 10 percent, forest managers may need to take a hard look at overall program needs and direction.

Evaluation of Forest Management in Meeting Forest Desired Conditions

Overall, the National Forests in North Carolina are moving toward their desired conditions, albeit more slowly than forest managers would like. In one area, silvicultural treatments, we are moving away from the LRMP goals, due to cut backs in timber production.

DC/Goal 1) *Maintain, and where possible, enhance the diversity of plant and animal communities. Maintain viable populations of existing native wildlife, fish, and plants.*

COMMENTARY: While the amount of older forest (late successional) communities is increasing, we are providing well below the amount of young forest (early successional) called for in the LRMPs. This is because our primary way of providing young forest is by regenerating areas where timber harvest has occurred. Since harvest levels are down, opportunities to provide this ecosystem component are minimal.

In regard to species, the Biological Evaluation process assures rare species population protection in areas where projects are taking place. However, resource specialists such as botanists and wildlife biologists are being stretched to the limit, and are only able to survey a limited number of sites. Many remote areas where no management activities take place are rarely examined. While populations of some well-known species such as black bear and turkey are stable or rising, little is known regarding other less understood species. While the N/P Forests appear diverse and resilient in that we are not losing species or communities, there are a number of concerns regarding long-term sustainability of certain ecosystems. These concerns include:

- Sustainability of forest botanical products in light of recent tremendous increases in popularity of medicinals;
- Invasive and pest non-native species. While the threat from invasive plants is still debatable, non-native fungi, insects, and diseases have potential to catastrophically affect forest communities.
- The need for more prescribed fire. Several N/P Forest communities are fire dependent, such as table mountain pine and pitch pine. Growing season burns are necessary on the Croatan for longleaf maintenance and restoration. Other communities may benefit from fire;
- The need for greater effort to retain oaks in mixed stands. In cove hardwood stands they are being out-competed by faster-growing species such as yellow-poplar, while on drier sites they are susceptible to oak decline.

DC/Goal 2) *Threatened and endangered plant and animal species are protected, managed or recovered consistent with the Endangered Species Act; and sensitive species are conserved.*

COMMENTARY: T&E species are a high priority, and the Biological Evaluation process assures rare species population protection in areas where projects are taking place. We could implement more conservation strategies if we had more staff. Currently, our staff specialists are stretched too thin. For most species our emphasis is on site protection with an occasional opportunity to make proactive habitat improvement work.

DC/Goal 3) *Attributes and resources of special interest areas including wilderness, research natural areas, and areas registered by the North Carolina Natural Heritage Program are maintained.*

COMMENTARY: No formal monitoring of attributes took place during FY 2000, however an addition was made to the Wild and Scenic River system with the designation of Wilson Creek on Pisgah National Forest.

Some ID Team members are concerned about erosion from trails, and illegal OHV activity in sensitive areas.

DC/Goal 4) *A variety of silvicultural treatments are used to provide a continuous supply of wood products with emphasis on high quality hardwoods.*

COMMENTARY: We are not coming anywhere close to providing the continuous supply of wood products called for in the LRMPs. This is due to budget cuts, vacancies in key timber and planning positions, and increased fieldwork necessary for the environmental analysis. New national direction, appeals and lawsuits,

along with interpretations of existing direction, have complicated the picture as far as exactly what level of field survey is required for wildlife, botanical, and fisheries analysis. The type of analysis required and the standards for documentation have also been redefined. The overall result is a lengthening of the amount of time for a project to go from the planning stage to the implementation stage.

DC/Goal 5) *Riparian areas, floodplains, wetlands, and their existing ecosystems are perpetuated and enhanced.*

COMMENTARY: LRMP standards provide protection, and special funds in FY 2000 allowed numerous rehabilitation projects to occur. Most of these took place where overuse by forest visitors had compacted and denuded stream banks, or had eroded trail treads to the point where sediment was entering nearby streams. Poorly maintained roads can also be a source of sediment, and road maintenance funds fail to keep pace with required maintenance. However we were able to decommission some old woods roads.

DC/Goal 6) *Water quality and soil productivity are maintained.*

COMMENTARY: North Carolina Division of Water Quality results show NFsNC lands consistently have higher quality streams than are on private lands. We have generally been able to respond following incidents such as floods, wind storms, and fires where soil productivity or water quality is threatened, and reduce the threat in a timely manner. Soil and water improvement work each year effectively curtails erosion problems from localized areas.

DC/Goal 7) *Protect the beauty of the Forests through special attention to visually sensitive areas and the careful application of resource management activities.*

COMMENTARY: Certainly the scenery is a big consideration when a potentially visually intrusive activity is being contemplated, such as timber harvest or road building. In these cases, mitigation measures are employed to reduce adverse impacts. Also, some proactive scenery enhancement work is occurring. However, there are many more opportunities for proactive scenery enhancement that could take place given adequate funding and staffing. This year a different impact to scenery came about as a result of the Southern Pine Beetle outbreak. It remains to be seen what the extent and intensity of the effects will be.

DC/Goal 8) *Provide different environmental and social settings for outdoor recreation opportunities that range from primitive to developed. Provide for a variety of recreational activities appropriate to these settings and the forest environment. Provide all recreation visitors to the National Forest the opportunity to participate in activities and programs and use facilities to the highest level of access practicable.*

COMMENTARY: Upgrading facilities and trails and increasing accessibility seems to be a main focus of management activities across the Forests. It appears more emphasis is on developed recreation sites than the intent of the LRMP's. That is because developed sites require more attention to maintenance to meet safety standards, especially buildings and water systems.

FY 2001 Action Plan

The following actions are needed to respond to monitoring results from FY 2000:

- 1)** Request Forest Health Protection to do an assessment of the extent of damage across the Forests from the current Southern Pine Beetle outbreak and develop a longer range monitoring plan. This will be necessary to analyze short- and long-term affects to ecosystem diversity, and specifically to the pine communities.

Responsibility: Forest Supervisor, Forest Health liaison
Target Completion Date: 9/30/2002

- 2)** Develop an approach to increasing the efficiency of producing environmental documents in a timely manner in response to unexpected events, as well a regular project work. This may require the Forest Leadership Team to deal with critical personnel issues and vacancies across the Forests.

Responsibility: Forest Supervisor, Planning Staff Officer
Target Completion Date: 9/30/2002

- 3)** Finish the NEPA documentation necessary to pursue control measures for Southern Pine Beetle.

Responsibility: Planning Staff Officer
Target Completion Date: 4/30/2001.

Status of FY 2000 Action Plan

1. Prepare a biological assessment and formally consult with USFWS on potential impacts of forest Plan implementation on Indiana Bat. If necessary, amend the Nantahala & Pisgah Land and Resource Management Plan (Amendment 10) to add directions and standards for protection of the endangered Indiana bat.

Responsibility: Forest Supervisor
Target Completion Date: 9/30/2000

Status: Completed

2. Hold a training session for field personnel on Nantahala Ranger Districts to familiarize them with:
 - Indiana Bat Biology and suitable habitat
 - How to proceed with USFWS consultations in the 4 county area
 - How to apply the direction and standards of any new amendment.

Responsibility: Planning and Ecosystems Staff Officer
Target Completion Date: 9/30/2000

Status: Completed

3. Evaluate the effects of not sustaining a continuous supply of wood.

Responsibility: Forest, Fire & Heritage Resources Staff Officer
Target Completion Date: 9/30/2000

Status: Dropped. Staff Officer position was vacant for a year.

4. Develop a program of work to determine the sustainability of forest botanical products and monitoring of permitted activity.

Responsibility: Planning and Ecosystems Staff Officer
Target Completion Date: 9/30/2000

Status: Completed.

5. Continue monitoring timber sales in response to the OIG report on the timber sale program. Complete three years of monitoring.

Responsibility: Forest, Fire & Heritage Resources Staff Officer
Target Completion Date: 9/30/2002

Status: Ongoing

6. Provide clarification of riparian area identification and management to district personnel

Responsibility: Planning and Ecosystems Staff Officer
Target Completion Date: 9/30/2000

Status: Completed

LIST OF PREPARERS

Ruth Berner – M&E Team leader

M&E Team Members:

Bill Jackson - Air specialist

Rod McClanahan - Wildlife biologist

Sandy Florence - Wildlife biologist

Mike McConnell - Hydrologist

Dan Manning - Soil scientist

John Blanton - Silviculturist

Steve Oak - Forest pathologist

Steve Simon - Ecologist

Sheryl Bryan - Fisheries biologist

Rodney Snedeker - Archeologist